

AMENDMENTS TO THE CLAIMS

1. (currently amended): A flexible connection unit for use in a spinal fixation device, ~~the flexible connection unit~~ comprising:

a first bone coupling assembly;

a second bone coupling assembly; and

a longitudinal rod, including:

a first end received by and coupled to a first bone coupling assembly;

a second end; and

a center section located between and coupled to the first end and the second end, the center section including a plurality of grooves~~a solid metal rod having grooves formed in a spiral configuration~~ along at least a portion of the surface of the center section rod so as to provide flexibility to the rod, at least two of the plurality of grooves coupled on the center section surface by an hole, and the hole at least twice as wide as the coupled grooves average width, the connection unit having a first portion configured to be coupled to a first securing member and a second portion configured to be coupled to a second securing member.

wherein the second bone coupling assembly is connected to the rod at a different location than the first bone coupling assembly.

2. (currently amended): The flexible connection unit of claim 1 wherein the ~~solid metal~~ rod is made from a material selected from the group consisting of: stainless steel, iron steel, titanium, titanium alloy and NITINOL.

3. (currently amended): The flexible connection unit of claim 1 wherein the rod is tubular along a longitudinal section is ~~cylindrical in shape and has a length between 4 and 8 centimeters and a cylindrical diameter between 4 and 8 millimeters.~~

4. (currently amended): The flexible connection unit of claim [3] 1 wherein the grooves are cut toward a center longitudinal axis of the rod, ~~the grooves having a depth between 1 and 4 millimeters and a width between 0.1 and 0.5 millimeters.~~

5. (currently amended): The flexible connection unit of claim 4 wherein the ~~grooves spiral around the rod at an angle from horizontal between 50 and 80 degrees and wherein the spacing between adjacent spirals of the groove is between 3 and 6 millimeters~~ rod is solid along a longitudinal section.

6. (currently amended): The flexible connection unit of claim [1] 5 further including a plurality of transverse tunnels formed within at least a portion of the solid [metal rod] longitudinal section and wherein each tunnel coincides with at least one hole.

7. (currently amended): The flexible connection unit of claim 6 wherein the rod is solid metal and the first end, the second end, and the center section are a monolith and the rod is cylindrical in shape and each transverse tunnel passes through a center longitudinal axis of the cylindrical rod such that openings for each respective transverse tunnel are located on opposite sides of the cylindrical wall of the rod and coincides with at least one hole.

8. (currently amended): The flexible connection unit of claim [7] 1 wherein ~~each transverse tunnel passes through the center longitudinal axis of the cylindrical rod at a predetermined angle <I>~~ and wherein adjacent transverse tunnels share a common opening on one side of the cylindrical wall, forming a zig-zag pattern of interior tunnels passing transversely through the central longitudinal axis of the rod the first end, the second end, and the center section are a monolith.

9. (Cancelled).

10. (currently amended): The flexible connection unit of claim [7] 6 wherein each of said plurality of transverse tunnels have an internal diameter between 0.2 and 3 millimeters.

11-14. (Cancelled).

15. (New) A connection unit for use in bony fixation, comprising:

a first bone coupling assembly; and

a longitudinal rod, including:

a first end received by and coupled to a first bone coupling assembly;

a second end; and

a center section located between and coupled to the first end and the second end, the center section including a plurality of grooves along at least a portion of the surface of the center section, at least two of the plurality of grooves coupled on the center section surface by an hole, and the hole at least twice as wide as the coupled grooves average width.

16. (New): The connection unit of claim 15 wherein the rod is made from a material selected from the group consisting of: stainless steel, iron steel, titanium, titanium alloy and NITINOL.

17. (New): The connection unit of claim 15 wherein the rod is tubular along a longitudinal section.

18. (New): The connection unit of claim 15 wherein the grooves are cut toward a center longitudinal axis of the rod.

19. (New): The connection unit of claim 18 wherein rod is solid along a longitudinal section.

20. (New): The connection unit of claim 19 further including a plurality of transverse tunnels formed within at least a portion of the solid longitudinal section and wherein each tunnel coincides with at least one hole.

21. (New): The connection unit of claim 20 wherein the rod is solid metal and the first end, the second end, and the center section are a monolith and the rod is cylindrical in shape and each transverse tunnel passes through a center longitudinal axis of the cylindrical rod such that openings for each respective transverse tunnel are located on opposite sides of the cylindrical wall of the rod and coincides with at least one hole.

22. (New): The connection unit of claim 15 wherein the first end, the second end, and the center section are a monolith.

23. (New): The connection unit of claim 21 wherein each of said plurality of transverse tunnels have an internal diameter between 0.2 and 3 millimeters.

24. (New) A connection unit for use in bony fixation, comprising:

- a longitudinal rod, including:

- a first end;

- a second end; and

- a center section located between and coupled to the first end and the second end, the center section including a plurality of grooves along at least a portion of the surface of the center section, at least two of the plurality of grooves coupled on the center section surface by an hole, and the hole at least twice as wide as the coupled grooves average width;

- a first bone coupling assembly connected to the rod, the first bone coupling assembly capable of securing the rod to a bone structure of a patient; and

- a second bone coupling assembly connected to the rod at a different location than the first bone coupling assembly, the second bone coupling assembly capable of securing the rod to a bone structure of the patient at a different location from the first coupling assembly.

25. (New): The connection unit of claim 24 wherein the rod is made from a material selected from the group consisting of: stainless steel, iron steel, titanium, titanium alloy and NITINOL.

26. (New): The connection unit of claim 24 wherein the rod is tubular along a longitudinal section.

27. (New): The connection unit of claim 24 wherein the grooves are cut toward a center longitudinal axis of the rod.

28. (New): The connection unit of claim 27 wherein rod is solid along a longitudinal section.

29. (New): The connection unit of claim 28 further including a plurality of transverse tunnels formed within at least a portion of the solid longitudinal section and wherein each tunnel coincides with at least one hole.

30. (New): The connection unit of claim 29 wherein the rod is solid metal and the first end, the second end, and the center section are a monolith and the rod is cylindrical in shape and each transverse tunnel passes through a center longitudinal axis of the cylindrical rod such that openings for each respective transverse tunnel are located on opposite sides of the cylindrical wall of the rod and coincides with at least one hole.

31. (New): The connection unit of claim 24 wherein the first end, the second end, and the center section are a monolith.

32. (New): The connection unit of claim 30 wherein each of said plurality of transverse tunnels have an internal diameter between 0.2 and 3 millimeters.